What is SARE?

Since 1988, the Sustainable Agriculture Research & Education (SARE) program has been the go-to USDA grants and outreach program for farmers, ranchers, researchers and educators who want to develop innovations that improve farm profitability, protect water and land, and revitalize communities. To date, SARE has awarded over $341 million to more than 7,925 initiatives.

SARE is grassroots with far-reaching impact

Four regional councils of expert practitioners set priorities and make grants in every state and island protectorate.

SARE communicates results

SARE shares project results by requiring grantees to conduct outreach and grower engagement; and by maintaining an online library of practical publications, grantee-produced information products and other educational materials.

SARE: Advancing the Frontier of Sustainable Agriculture in...

South Carolina

Project Highlight: *Fruit Bagging Reduce Reliances on Pesticides*

When Clemson University fruit specialist Juan Carlos Melgar suggested putting a paper bag over a peach to detract insects and diseases during production, farmers laughed. But when his SARE-funded trials showed that the technique protects the fruit from devastating brown rot, marauding insects like plum curculio and even hungry birds, producers and backyard growers started paying attention.

Researchers found that bagging peaches between petal fall and harvest reduces pesticide use while increasing yields and maintaining flavor. Even though it involves more labor, Melgar estimated that bagging can increase revenue by $95 per tree in an organic system when the fruit is sold directly to consumers. “We’ve gotten a lot of positive responses from farmers all over the country as a result of the research study,” said Melgar.

Fruit bagging for protection is a common strategy in Asia. With South Carolina ranked second in the nation behind California in peach production at 77,000 tons, researchers at Clemson felt that applying the technique to orchards was a worthwhile endeavor because peach growers in the southeastern U.S. face very high pest and disease pressures. Melgar is taking this research to a regional level with a newly acquired $1 million USDA-NIFA grant, applying the technique to more orchards in South Carolina, Georgia and Florida.

For more information on this project, see sare.org/projects, and search for project number OS16-094.

SARE in South Carolina

southern.sare.org/sare-in-your-state/south-carolina

$4,524,645 in total funding

73 grant projects

(since 1988)

For a complete list of grant projects state by state, go to www.sare.org/state-summaries
SARE Grants in South Carolina

Total awards: 73 grants
- 19 Research and Education
- 6 Sustainable Community Innovation
- 12 Professional Development Program
- 20 Farmer/Rancher
- 6 Graduate Student
- 10 On Farm Research/Partnership

Total funding: $4,524,645
- $3,361,066 Research and Education
- $43,620 Sustainable Community Innovation
- $720,833 Professional Development Program
- $182,885 Farmer/Rancher
- $73,864 Graduate Student
- $142,377 On Farm Research/Partnership

Find a complete list of projects on page 3.

SARE's Impact

53 percent of producers report using a new production technique after reading a SARE publication.

79 percent of producers said they improved soil quality through their SARE project.

64 percent of producers said their SARE project helped them achieve higher sales.

Learn about local impacts at: southern.sare.org/sare-in-your-state/south-carolina

Contact Your SARE State Coordinator

SARE sustainable ag coordinators run state-level educational programs for Extension and other ag professionals, and many help grant applicants and recipients with planning and outreach. Visit southern.sare.org/state-pages/south-carolina to learn more.

Joshua Idassi
South Carolina State University
(803) 878-9038
jidassi@scsu.edu

Matt Smith
Clemson University
(843) 519-0464
mcs5@clemson.edu

For detailed information on SARE projects, go to www.SARE.org

SARE is funded by the USDA’s National Institute of Food and Agriculture (NIFA).

This report includes summaries of competitive grant programs only. Some competitive grant programs that are no longer offered may be included or excluded from the totals in this report depending on the grant program and SARE region.
South Carolina has been awarded $4,524,645 grants to support 69 projects, including but not limited to, 15 research and/or education projects, 12 professional development projects and 20 producer-led projects. South Carolina has also received additional SARE support through multi-state projects.

### RESEARCH AND EDUCATION GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS22-374</td>
<td>Cover crop inter-seeding in organic corn production to reduce resource inputs and soil disturbance and enhance pest control and farm profitability</td>
<td>$371,000</td>
<td>Dr.Sruthi Narayanan, Clemson University, Dr.Carmen Blubaugh, University of Georgia, Dr.Joshua Idassi, South Carolina State University, Dr.Dave Lamie, Clemson University, Dr.Meghnaa Tallapragada, Temple University, Dr.Rongzhong Ye, Clemson University</td>
</tr>
<tr>
<td>LS22-369</td>
<td>Establishing an Organic Watermelon Industry in South Carolina</td>
<td>$370,000</td>
<td>Matthew Cutulle, Clemson University, CREC, Dr.Bhupinder Farmaha, Clemson University, Dr.Shaker Kousik, USDA-ARS-United States Vegetable Lab, Dr.Amnon Levi, USDA-ARS-United States Vegetable Lab, Brian Ward</td>
</tr>
<tr>
<td>LS22-366</td>
<td>Development of Sustainable Strategies for Managing Bacterial Diseases and Improving Tree Health in the Peach Production System</td>
<td>$371,000</td>
<td>Hehe Wang, Clemson University, Juan Carlos Melgar, Clemson University, Guido Schnabel, Clemson University, Dr.Michael Vassalos, Clemson University, Dr.Rongzhong Ye, Clemson University</td>
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<tr>
<td>LS21-355</td>
<td>Gullah/Geechee Agro-Culture: Sustaining Culture to Sustain Agriculture in the Lowcountry</td>
<td>$341,346</td>
<td>Dr.Najmah Thomas, University of South Carolina Beaufort</td>
</tr>
<tr>
<td>LS21-359</td>
<td>Strengthening Farmer-consumer Connections for Sustainable Agricultural Systems</td>
<td>$213,954</td>
<td>Courtney Quinn, Furman University, Dr.Karen Allen, Furman University, Dr.John Quinn, Furman University</td>
</tr>
<tr>
<td>LS19-306</td>
<td>Utility of Anaerobic Soil Disinfection and Organic Herbicides for Weed and Disease Management in Organic Solanaceous Vegetable Systems</td>
<td>$293,470</td>
<td>Matthew Cutulle, Clemson University, CREC</td>
</tr>
</tbody>
</table>
Incorporating Natural, Non-toxic Arthropod Resistant Tomato Varieties into Southern Production Systems

$299,963

Juang-Horng Chong
Clemson University

Improving Silvopasture Systems in the South: Identification of Suitable Forage Crops and Enhancement of Environmental Quality in Upland Forests

$135,487

Dr. John Quinn
Furman University

Improvement of the safety of food handling practices on small farms

$200,000

Dr. Paul Dawson
Clemson University

Expanding the grazing season for sustainable year-round forage-finished beef production

$163,000

Susan Duckett
Clemson University

Development and Integration of Sustainable Agriculture Core Curriculum Training into the Southern Region Extension Education System

$241,000

Dr. Geoff Zehnder
Clemson University

Suppression of weeds and other pests in fresh market vegetables using wild radish cover crop

$173,125

Jason Norsworthy
Clemson University

Creating a value chain system for local and regional farm products

$19,310

Dr. Geoff Zehnder
Clemson University

Evaluation of Low-Input, No-Till, No-Herbicide Continuous Grazing System for Dairy Cows

$118,911

Jean Bertrand
Clemson University

PROFESSIONAL DEVELOPMENT PROGRAM GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPDP22-15</td>
<td>Training Educators in the Southern Region Using Aquaponics as a Sustainable Agriculture Solution</td>
<td>$71,980</td>
<td>Dr. Lance Beecher, Clemson University, Ben Calhoun, Greenwood Area SBDC, Roland McReynolds, Carolina Farm Stewardship Association</td>
</tr>
<tr>
<td>SPDP21-01</td>
<td>Train the Trainers: Reducing impacts from harmful algal blooms in livestock water sources in South Carolina</td>
<td>$79,975</td>
<td>Dr. Debabrata Sahoo, Clemson University, Dr. Matthew Burns, Clemson University, Mark Nettles, South Carolina State University, 1890 Research and Extension, Heather Nix, Clemson University Cooperative Extension, Dr. Michael Vassalos, Clemson University, Sarah White, Clemson University</td>
</tr>
<tr>
<td>ES19-150</td>
<td>Advanced Soil Health Training for South Carolina Agriculture Professionals</td>
<td>$79,847</td>
<td>Kelly Flynn, Clemson University</td>
</tr>
<tr>
<td>ES17-137</td>
<td>Wholesale Success: Building the capacity of farmers to meet demand for locally and sustainably grown produce</td>
<td>$78,008</td>
<td>Dr. Geoff Zehnder, Clemson University</td>
</tr>
<tr>
<td>ES13-117</td>
<td>Training in Renewable Energy Systems for Small Farms to Reduce Energy Costs and Improve Profitability</td>
<td>$78,128</td>
<td>Dr. Geoff Zehnder, Clemson University</td>
</tr>
</tbody>
</table>
### Pollinator Conservation Short Course

**Project #**: ES11-108

**Project Title**: Pollinator Conservation Short Course

**SARE Support**: $92,066

**Project Leaders**: Eric Mader

The Xerces Society

### On-Farm Training in Organic Pest Management Practices for Small, Diversified Farms

**Project #**: ES10-106

**Project Title**: On-Farm Training in Organic Pest Management Practices for Small, Diversified Farms

**SARE Support**: $83,775

**Project Leaders**: Dr. Geoff Zehnder

Clemson University

### Calhoun Fields Laboratory: A Program for Experiential Training in Organic Farming Systems

**Project #**: ES02-064

**Project Title**: Calhoun Fields Laboratory: A Program for Experiential Training in Organic Farming Systems

**SARE Support**: $49,926

**Project Leaders**: Dr. Geoff Zehnder

Clemson University

### South Carolina Farm and Forest Land Conservation Training

**Project #**: ES01-057

**Project Title**: South Carolina Farm and Forest Land Conservation Training

**SARE Support**: $25,428

**Project Leaders**: Ben Boozer

Clemson Institute for Economic & Community Develop

### Overcoming Training Obstacles: A Realistic Cost-Effective Approach

**Project #**: ES97-017

**Project Title**: Overcoming Training Obstacles: A Realistic Cost-Effective Approach

**SARE Support**: $10,000

**Project Leaders**: Charles Q. Artis

South Carolina State University, Community and Economic Development

### The First Requirement of Agriculture Sustainability: Efficient Management of Available Resources

**Project #**: ES97-018

**Project Title**: The First Requirement of Agriculture Sustainability: Efficient Management of Available Resources

**SARE Support**: $60,000

**Project Leaders**: Charles Q. Artis

South Carolina State University, Community and Economic Development

### Extending Sustainable Agriculture Concepts and Practices to Traditional Agricultural Advisors

**Project #**: LST94-006

**Project Title**: Extending Sustainable Agriculture Concepts and Practices to Traditional Agricultural Advisors

**SARE Support**: $11,700

**Project Leaders**: Jim Palmer

Clemson

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### FARMER/RANCHER GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
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<tbody>
<tr>
<td>FS22-341</td>
<td>Does reduction of nitrate inputs in pasture land treated with Chlorella vulgaris result in cost savings and healthier soil and grass?</td>
<td>$10,975</td>
<td>Dale Snyder</td>
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<td>Sweetgrass Garden Co-op</td>
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<tr>
<td>FS21-330</td>
<td>Does Treatment with Chlorella vulgaris Extend the Life of Tomato Plants to Increase Tomato Sales?</td>
<td>$14,640</td>
<td>Dale Snyder</td>
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<td>Sweetgrass Garden Co-op</td>
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<tr>
<td>FS20-326</td>
<td>Summer Cover Crops for Organic No-till Broccoli</td>
<td>$14,820</td>
<td>Sarah Belk</td>
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<td>Wild Hope Farm</td>
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<tr>
<td>FS18-309</td>
<td>Studying the Use of Copper to Raise Healthier Goats</td>
<td>$10,000</td>
<td>Judy Langley</td>
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<td>Windy Hill Farm</td>
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<tr>
<td>FS17-300</td>
<td>Scaling Indigo Production in South Carolina</td>
<td>$5,965</td>
<td>Kathy McCullough</td>
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<td>Farmer</td>
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<tr>
<td>FS16-288</td>
<td>Modified Method for Roller-Crimper No Till System in the Southeast Coastal Plain</td>
<td>$8,327</td>
<td>Mary Connor</td>
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<td>Three Sisters Farm</td>
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<tr>
<td>FS14-284</td>
<td>Is freshwater fish compost as effective as saltwater fish compost on vegetable production?</td>
<td>$10,000</td>
<td>Dale Snyder</td>
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<td>Sweetgrass Garden Co-op</td>
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<td>FS13-276</td>
<td>Shade cloth for fall bearing blackberry druplet abortion/malfunction problems in southeastern USA</td>
<td>$6,458</td>
<td>Walker Miller</td>
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<td>The Happy Berry Bunch</td>
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<tr>
<td>FS11-255</td>
<td>Cucumber Pollination with Bumblebees</td>
<td>$8,530</td>
<td>David MacFawn</td>
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<td>Rawl Farms</td>
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<tr>
<td>FS11-257</td>
<td>Is Fish Waste Compost worth the Mess and Effort?</td>
<td>$9,848</td>
<td>Dale Snyder</td>
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<td></td>
<td></td>
<td></td>
<td>Sweetgrass Garden Co-op</td>
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<tr>
<td>Project #</td>
<td>Project Title</td>
<td>SARE Support</td>
<td>Project Leaders</td>
</tr>
<tr>
<td>----------</td>
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</tbody>
</table>
| GS18-192 | Cover Cropping to Improve Soil Moisture Content for the Following Cash Crop   | $16,496      | Dr. Sruthi Narayanan
Clemson University
Ricardo St. Aime
Clemson University |
| GS17-174 | Optimizing Nutritional Management in Fruit Tree Production in Southern U.S.    | $16,441      | Juan Carlos Melgar
Clemson University
Qi Zhou
Clemson University |
| GS13-126 | Weeds, Nitrogen, and Yield: Measuring the Effectiveness of an Organic No-Till System | $10,927     | Dr. Geoff Zehnder
Clemson University
David Robb
Clemson University |
| GS04-041 | Preliminary Investigation for Application of Supercritical Fluid Extraction Technology for Garlic Oil Extraction | $10,000      | Terry Walker
Clemson University
Meidui Dong
Clemson University |
| GS04-034 | Control of Soilborne Fungi with Biofumigation                                 | $10,000      | Anthony Keinath
Clemson University
Samuel Njoroge
Clemson University |
| GS03-020 | The Assessment of Conservation and Traditional Tillage Systems on Weed Dynamics, Insect Abundance, and Northern Bobwhite Quail Life and Behavioral Patterns | $10,000      | William Bowerman
Clemson University
Derek Eggert
Clemson University |
## ON FARM RESEARCH/PARTNERSHIP GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS20-133</td>
<td>The Potential of Inter-seeded Cover Crops for Enhancing Soil Health and Soil Moisture Content in a Row Crop Production System</td>
<td>$20,000</td>
<td>Dr.Sruthi Narayanan Clemson University</td>
</tr>
<tr>
<td>OS18-118</td>
<td>Cover Cropping to Increase the Sustainability of Cropping Systems by Developing Soil Organic Matter, Improving Soil Health, and Suppressing Weed Growth</td>
<td>$15,000</td>
<td>Dr.Sruthi Narayanan Clemson University</td>
</tr>
<tr>
<td>OS17-109</td>
<td>Identification of Factors Involved in Peach Skin Streaking</td>
<td>$15,000</td>
<td>Guido Schnabel Clemson University</td>
</tr>
<tr>
<td>OS16-100</td>
<td>Getting to the Bottom of ‘Bronzing’, A Peach Skin Disorder Causing Severe Losses for Organic and Conventional Peach Growers</td>
<td>$15,000</td>
<td>Guido Schnabel Clemson University</td>
</tr>
<tr>
<td>OS16-096</td>
<td>Cover Crop Influence on Stored Soil Water Availability to Subsequent Crops</td>
<td>$14,995</td>
<td>Dr.Sruthi Narayanan Clemson University</td>
</tr>
<tr>
<td>OS16-094</td>
<td>Fruit Bagging as a Strategy to Reduce Reliance on Pesticides for the Production of Peaches in the Southeast</td>
<td>$14,967</td>
<td>Juan Carlos Melgar Clemson University</td>
</tr>
<tr>
<td>OS16-093</td>
<td>Increasing Sustainability of Peanut, Cotton, and Soybean Production Systems Through Innovative Interseeding Technology to Enhance Farm Profit and Reduce Pest Occurrence</td>
<td>$14,990</td>
<td>Daniel Anco Clemson University</td>
</tr>
<tr>
<td>OS07-035</td>
<td>On-Farm Use of a Hybrid Vetch Cover Crop to Reduce Fusarium Wilt in Seedless Watermelon</td>
<td>$9,900</td>
<td>Anthony Keinath Clemson University</td>
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<tr>
<td>OS03-010</td>
<td>Poultry Litter Research Project</td>
<td>$12,600</td>
<td>David Gunter Clemson Extension Service</td>
</tr>
<tr>
<td>OS03-013</td>
<td>Growing Organic Fruits and Vegetables for Local Farmer’s Markets</td>
<td>$9,925</td>
<td>York Glover</td>
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</tbody>
</table>

## SUSTAINABLE COMMUNITY INNOVATION GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS12-087</td>
<td>Fighting Obesity in Schools By Changing Eating Habits of Students</td>
<td>$10,000</td>
<td>Robert Behr Ashley Ridge High School</td>
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<tr>
<td>CS10-078</td>
<td>GrowFood Carolina</td>
<td>$10,000</td>
<td>Lisa Turansky South Carolina Coastal Conservation League</td>
</tr>
<tr>
<td>CS08-065</td>
<td>Marshview Community Organic Farms – Young Farmers of the Lowcountry</td>
<td>$9,700</td>
<td>Sara Reynolds Marshview Community Organic Farm</td>
</tr>
<tr>
<td>CS08-064</td>
<td>Growing the Manning Farmer’s Market</td>
<td>$5,050</td>
<td>Rebecca Rhodes City of Manning</td>
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<tr>
<td>CS07-059</td>
<td>Chicora Farmers Market</td>
<td>$6,300</td>
<td>Amanda Crump Metanoia CDC</td>
</tr>
</tbody>
</table>
Total funding from the USDA SARE program to South Carolina
$4,524,645

For further information on projects, contact Candace Pollock, Southern SARE public relations coordinator, at (770) 412-4786 or cpollock@uga.edu. Sustainable Agriculture Research and Education (SARE) is funded by USDA’s National Institute of Food and Agriculture (NIFA).